REMARKS/ARGUMENTS

Applicant's undersigned attorney requests an interview with the Examiner after the Examiner has had an opportunity to review the amendment and arguments submitted herein.

Claims 1, 17, 26 and 27 are amended herein. Claims 1-28 are currently pending.

Claims 1 and 17 have been amended to tie the steps to an apparatus (management system). Accordingly, claims 1-28 are believed to comply with the requirements of 35 U.S.C. 101.

Claims 1, 5, and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,068,630 (San Filippo) in view of U.S. Patent Application Publication No. 2003/0126246 (Blouin et al.).

San Filippo is directed to a method for measuring load between MCDN devices for use in determining the path with optimal throughput. A local node measures its own load and communicates its load to its neighboring nodes, which communicate their loads to the local node. The portion of load attributed by each node to the total load on a link between nodes is subtracted from the load value to obtain a measurement. As noted by the Examiner, San Filippo does not derive a traffic flow model for a modified scenario using a plurality of constraints describing the interdependency of an initial to a modified scenario or calculate values or upper and lower bounds of traffic values for the modified scenario from the traffic flow model using the input data.

Blouin et al. describe a system and method for network control and provisioning. The system performs a routing function, resource allocation, configures network resources to satisfy resource allocation requirements, and calculates network provisioning requirements.

In rejecting the claims, the Examiner refers to Fig. 1 and lines 1-14 of paragraph [0008] of Blouin et al. Fig. 1 illustrates a functional representation of a multi-stratum multi-timescale network control. Routing means (edge controller 250) operate at a first stratum on a first timescale. Resource allocation means (core controller 260) operate at a second stratum on a second timescale, and provisioning means (network controller 270) operate at a third stratum on a third timescale (see Figs. 1 and 2). The lower stratum network function provides network information to the higher stratum network function which makes control decisions based on the network information. The network is initially provisioned based on an estimated aggregate traffic demand for each pair of edge nodes. The core controllers may make corrections to resource allocations which are utilized by the edge controllers.

Blouin et al. do not derive a traffic flow model for a modified scenario using a plurality of constraints describing the interdependency of an initial to a modified scenario or calculate values or upper and lower bounds of traffic values for a modified scenario from a traffic model using input data. In contrast to the claimed invention, Blouin et al. simply perform resource allocation, network provisioning and routing on different timescales.

Furthermore, in the Background of the Invention, Blouin et al. note that the use of both traffic models and traffic monitoring would require excessive computing time, after which relevant, current data on which to base provisioning decisions may not be easily obtained. Thus, Blouin et al. specifically teach away from the use of traffic measurements and traffic models, as set forth in the claims.

In Response to the Arguments, the Examiner again refers to paragraph [0008], lines 1-14 of Blouin et al. As discussed above, this section of the patent application describes how a source node chooses the best available route from a sorted list of routes and collects information of the state of these routes. The Examiner has not cited any teaching of deriving a traffic flow model for a modified scenario or calculating upper and lower bounds of traffic values for the modified scenario from a

traffic flow model using input data. Furthermore, Blouin et al. do not teach using constraints to describe the interdependency of an initial to a modified scenario.

Applicant's invention is particularly advantageous in that the system can be used to calculate traffic values in a communications network for a modified scenario using measured traffic data of the initial network. By deriving constraints from the interdependency of the initial and modified network, actual traffic data can be used in the calculation for the modified scenario if they are not affected by the modifications. In this way, either exact values or relatively tight bounds can be derived for the desired traffic values in a modified network. Furthermore, the system can be used to analyze a whole set of modifications. This is useful, for example, for a resilience analysis of a communications network where a service provider might want to ensure that the network has enough capacities to deal with the failure of one or more links.

Accordingly, claim 1 is submitted as patentable over the references cited.

Claims 2-16, depending either directly or indirectly from claim 1, are submitted as patentable for at least the same reasons as claim 1.

Claim 5 is further submitted as patentable over San Filippo, which does not show or suggest verifying the consistency of measured input data using information about the network topology or behavior of the initial scenario. San Filippo describes at col. 2, line 61 - col. 3, line 2, how load measurement of a communication link is synchronized to the period of load measurement of the locally-originated traffic. This is done to determine with the relative contribution of each load is to the net load. There is no comparison of measured input data using network topology or network behavior to determine the consistency of measured input data.

With regard to claim 24, Blouin et al. do not teach calculating a minimal and a maximal value for each solution variable taking into account one or more different modifications. In rejecting the claim, the Examiner refers to paragraph [0008], lines 1-14 of Blouin et al. This section of the patent application refers to how the invention provides a mult-stratum multi-timescale control system and method which enables the

network to autonomously adapt to time-varying traffic and network state. There is no disclosure of calculating minimal or maximal values for different solution variables.

Claims 26 and 28 are apparatus and computer claims generally corresponding to the method of claim 1. Accordingly, claims 26 and 28 are submitted as patentable for at least the same reasons as claim 1.

Claims 6-7, 9, 11-12, and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over San Filippo in view of Blouin et al. and further in view of U.S. Patent No. 6,404,744 (Saito).

The Saito patent is directed to a method for designing a communication network. In rejecting claim 6, the Examiner refers to an optimization step in the flowchart of Fig. 2 of Saito. There is no teaching of correcting input data if inconsistencies are detected. With regard to claims 7 and 9, the Examiner refers to the Background in Saito, which merely describes an optimization section that solves a linear programming problem generated by an optimization reference generator to determine the capacities of the paths and links. There is no teaching of solving a linear programming problem with a linear objective function to minimize data traffic reconciliation (error correction), as set forth in claim 7, or traffic values in a modified scenario expressed as a linear function of node-to-node flows in an initial scenario, as set forth in claim 9.

Claim 17 stands rejected under 35 U.S.C. 103(a) as being unpatentable over San Filippo in view of Blouin et al., and U.S. Patent No. 6,594,268 (Aukia et al.).

Claim 17 is submitted as patentable over San Filippo and Blouin et al. for the reasons discussed above with respect to claim 1.

Aukia et al. is directed to an adaptive routing system for QoS packet networks. In rejecting the claims, the Examiner refers to Fig. 5, which shows a distributed processing and database system. Aukia et al. describe how control packets may be modified to allow for collection of additional features of network topology

information. There is no teaching of defining one or more solution variables for a modified scenario, as set forth in the claim. Instead, Aukia et al. refer to modifying control packets.

Accordingly, claim 17 is submitted as patentable over San Filippo, Blouin et al., and Aukia et al.

Claim 3 is further submitted as patentable over Aukia et al., which do not show or suggest constraints derived from network topology and network behavior of an initial network. In rejecting the claim, the Examiner refers to the flowchart of Fig. 10 and col. 21, lines 25-38 which describe how initial values are provided to define the network topology and characteristics. In contrast to Aukia et al., claim 3 specifies that the constraints are derived from the network topology and behavior. Instead of deriving constraints from the network, Aukia et al. use values to define the network topology.

Claims 18-15, depending either directly or indirectly from claim 17, are submitted as patentable for at least the same reasons their base independent claim.

Claim 27 is a system claim generally corresponding to the method of claim 17 and is submitted as patentable for at least the same reasons as claim 17.

The other references cited, including U.S. Patent Nos. 7,206,289 (Hamada), 7,111,074 (Basturk), 5,043,027 (Takase et al.), 7,047,309 (Baumann et al.), and 6,498,778 (Cwilich et al.) and U.S. Patent Application Publication Nos. 2003/0118027 (Lee et al.) and 2002/0167898 (Thang et al.), do not overcome the deficiencies of the primary references.

For the foregoing reasons, Applicants believe that all of the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a telephone conference would in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (408) 399-5608.

Respectfully submitted,

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